

Claims

1. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) including the following steps:
 - a) Friedel Crafts reaction of diphenylether with an acylating agent selected between alpha-bromoisobutyryl bromide and alpha-chloroisobutyryl chloride, catalized by Lewis acids;
 - b) reaction of 2-bromo-1-{4-[4-(2-bromo-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one (or of 2-chloro-1-{4-[4-(2-chloro-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one) obtained in step a) with hydrated bases, at a temperature comprised between 10°C and 50°C, to give 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one dissolved in solvent;
 - c) crystallization of the thus obtained product.
2. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) according to claim 1., wherein the Friedel Crafts reaction of step a) is performed as follow:
 - i. preparing a solution of acylating agent and diphenylether, in a molar ratio comprised between 2.0 to 2.2, in dichloromethane and then adding AlCl_3 in portions to the solution, maintaining the temperature between -20°C and 20°C;
 - ii. quenching by pouring the reaction mixture in diluted acidic water solution, separating the phases and washing with water or brine the organic phase;
 - iii. evaporating the solvent and dissolving the reaction product in an aliphatic alcohol soluble in water.
3. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) according to claim 2., wherein the alcohol of iii. is isopropanol.
4. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) according to claim 3., wherein the reaction of step b) is performed at a temperature comprised between 15°C and 40°C by addition of a hydrated base to the organic phase obtained from step a).

5. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) according to claim 4., wherein the hydrated base is NaOH in aqueous solution at 20-50 %.
6. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) according to claim 5., wherein the crystallization of step c) is performed through addition of from 0.5 to 2.0 parts by weight of water for every part by weight of isopropanol and cooling at a temperature between 0°C and 10°C, collecting by filtration the thus obtained precipitate and drying it at a temperature between 20°C and 60°C.
7. Procedure for the preparation of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one as white solid in the form of powder (COMPOUND1) according to claim 1., wherein:
 - i. the Friedel Crafts reaction of step a) is performed preparing a solution of acylating agent and diphenylether, in molar relationship comprised between 2.0 and 2.2 in dichloromethane, adding in portions AlCl_3 to the solution maintaining the temperature between -20°C and 20°C, quenching in diluted acidic water solution the reaction mixture, separating the phases and washing with water or brine the organic phase;
 - ii. the thus obtained organic phase is used as such in step b);
 - iii. a phase transfer catalyst is added to the biphasic mixture of reaction of step b);
 - iv. the crystallization is performed by partial distillation of the solvent in which 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one is dissolved after step b) and cooling or through partial evaporation of the solvent and dilution with lipophilic solvents, such as petroleum ether or hexane.
8. White solid photoinitiator in the form of powder, having melting point between 96°C and 99°C and consisting of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one (COMPOUND1).
9. Method for the preparation of a photopolymerizable system through solubilization of the white solid photoinitiator in the form of powder, having melting point between 96 and 99°C and consisting of 2-hydroxy-1-{4-[4-(2-

hydroxy-2-methyl-propionyl)-phenoxy]-phenyl)-2-methyl-propan-1-one, (COMPOUND1), in a quantity between 0.01 and 20% by weight, in one or more reactive ethylenically unsaturated monomers and/or oligomers at a temperature between 20 and 60°C.

10. Method for the preparation of a photopolymerizable system according to claim 9., wherein the quantity of photoinitiator is between 0.5 and 5% by weight.
11. Method for the coating of wood surfaces, of paper, cardboard, plastics or metal through application of a photocrosslinkable system prepared by dissolution of the white solid photoinitiator in the form of powder, having melting point between 96°C and 99°C and consisting of 2-hydroxy-1-{4-[4-(2-hydroxy-2-methyl-propionyl)-phenoxy]-phenyl}-2-methyl-propan-1-one (COMPOUND1), in one or more reactive ethylenically unsaturated monomers and/or oligomers and the subsequent photopolymerization with a source of light with emission bands in the UV-visible region.